What is claimed is:

1. A progressive scan method used in a display including a deinterlacer that receives field data of an interlaced scanning format and converts the received field data into frame data of a progressive scanning format, the progressive scan method comprising:

receiving pixel data forming field data;

determining predetermined pixel windows with respect to respective center pixels that are to be interpolated to empty lines of the field data and computing a standard deviation of pixel data of the lines of the field data other than the empty lines in respective pixel windows and computing the differences between pixel data according to predetermined directions;

computing the minimum absolute difference according to predetermined directions;

determining a direction corresponding to the minimum absolute difference as a gradient direction among the predetermined directions;

detecting a first edge direction where the standard deviation, the differences between pixel data according to the predetermined directions, and the determined gradient direction satisfy a predetermined first edge-determination condition;

detecting a final edge direction where the standard deviation, the first edge direction, and the differences between pixel data divided by the first edge direction that is used as an edge boundary satisfy a predetermined second edge-determination condition; and

outputting an interpolated value corresponding to the final edge direction as interpolated pixel data.

2. The progressive scan method of claim 1, wherein when the predetermined pixel windows have a size of 7 x 3 where there are pixel data G, H, A, B, C, L, and M of the first line, pixel data N, P, D, E, F, Q, and S of the third line, and pixel data T, U, V, W, X, Y, and Z of an empty line which are equal to averaged values of pixel data corresponding to the first edge direction, the number of predetermined directions is 9, and the differences between pixel data according to the predetermined directions, the

absolute differences, the predetermined first edge-determination condition, the first edge direction, the differences between both pixel data divided by the first edge direction that is used as an edge boundary, the predetermined second edge-determination condition, and the final edge direction are determined by predetermined equations.

3. The progressive scan method of claim 2, wherein the differences between pixel data according to the predetermined directions are computed as follows:

$$\begin{array}{l} af = A-F, be = B-E, cd = C-D, aq = A-Q, hf = H-F, cp = C-P \\ ld = L-D, as = A-S, hq = H-Q, gf = G-F, cn = C-N, lp = L-P \\ md = M-D, hs = H-S, gq = G-Q, mp = M-P, \ln = L-N \end{array},$$

and the absolute differences are computed as follows:

$$\begin{array}{l} a' = |af|,\ \ b' = |be|,\ \ c' = |cd|, \\ d' = (|aq| + |hf|)/2,\ e' = (|cp| + |ld|)/2, \\ f' = (|as| + |hq| + |gf|)/3,\ \ g' = (|cn| + |lp| + |md|)/3, \\ h' = (|hs| + |gq|)/2,\ \ i' = (|\ln| + |mp|)/2 \end{array}$$

and the predetermined first edge-determination condition and the first edge direction are computed as follows:

$$Min = \min(a', b', c', d', e', f', g', h', i')$$

$$STD\ (i,j) = \sqrt{\frac{1}{14}\sum_{i=0}^{1}\sum_{j=0}^{6}\{x(i,j)\}^2 - \frac{1}{14}\sum_{i=0}^{1}\sum_{j=0}^{6}x(i,j)}$$

$$Y\_dir = \begin{cases} -1, (Min == a')\&\&(b' > STD)\&\&(c' > STD)\&\&(MSB[be] == MSB[cd]) \\ 1, (Min == c')\&\&(a' > STD)\&\&(b' > STD)\&\&(MSB[af] == MSB[be]) \\ -2, (Min == d')\&\&(b' > STD)\&\&(e' > STD)\&\&(MSB[be] == MSB[cp] == MSB[ld])) \\ 2, (Min == e')\&\&(b' > STD)\&\&(d' > STD)\&\&(MSB[be] == MSB[aq] == MSB[hf])) \\ -3, (Min == f')\&\&(b' > STD)\&\&(g' > STD)\&\&(MSB[be] == MSB[cn] == MSB[lp] == MSB[md])) \\ 3, (Min == g')\&\&(b' > STD)\&\&(f' > STD)\&\&(MSB[be] == MSB[as] == MSB[hq] == MSB[gf])) \\ -4, (Min == h')\&\&(b' > STD)\&\&(i' > STD)\&\&(MSB[be] == MSB[\ln] == MSB[mp]))] \\ 4, (Min == i')\&\&(b' > STD)\&\&(h' > STD)\&\&(MSB[be] == MSB[hs] == MSB[gq]) \\ 0, else \end{cases}$$

where STD denotes the standard deviation of pixel data of the first line and third line, and Y_dir denotes the first edge direction.

4. The progressive scan method of claim 2, wherein the differences between both pixel data divided by the first edge direction that is used as an edge boundary are computed as follows:

$$bv = |B - V|, \quad xe = |X - E|, \quad bx = |B - X|,$$
$$ve = |V - E|, \quad bu = |B - U|, \quad ye = |Y - E|,$$
$$by = |B - Y|, \quad ue = |U - E|, \quad bt = |B - T|,$$
$$ze = |Z - E|, \quad ct = |C - T|, \quad zd = |Z - D|,$$
$$az = |A - Z|, \quad tf = |T - F|, \quad bz = |B - Z|,$$
$$te = |T - E|$$

and the second edge-determination condition and an interpolated value are computed as follows:

$$W' = \begin{cases} (A+F)/2, & (Y\_dir = -1) \&\& (bx < STD) \&\& (ve < STD) \\ (C+D)/2, & (Y\_dir = 1) \&\& (bv < STD) \&\& (xe < STD) \\ (A+H+F+Q)/4, & (Y\_dir = -2) \&\& (by < STD) \&\& (ue < STD) \\ (C+L+P+D)/4, & (Y\_dir = 2) \&\& (bu < STD) \&\& (ye < STD) \\ (H+Q)/2, & (Y\_dir = -3) \&\& (bz < STD) \&\& (te < STD) \\ (L+P)/2, & (Y\_dir = 3) \&\& (bt < STD) \&\& (ze < STD) \\ (G+H+Q+S)/4, & (Y\_dir = -4) \&\& (az < STD) \&\& (tf < STD) \\ (L+M+N+P)/4, & (Y\_dir = 4) \&\& (ct < STD) \&\& (zd < STD) \\ (B+E)/2 & else \end{cases}$$

where STD denotes the standard deviation of pixel data of the first line and third line, Y_dir denotes the first edge direction, and W' denotes the interpolated value.

5. The progressive scan method of claim 2, wherein the predetermined first edge-determination condition and the first edge direction are used for determining whether directional edge dependent interpolation is to be conducted, and the predetermined second edge-determination condition and the final edge direction are used for performing simple linear interpolation in a high-frequency texture region.

6. The progressive scan method of claim 1, wherein the predetermined first edge-determination condition and the first edge direction are used for determining

whether directional edge dependent interpolation is to be conducted, and the predetermined second edge-determination condition and the final edge direction are used for performing simple linear interpolation in a high-frequency texture region.

7. The progressive scan method of claim 1, wherein the determined gradient direction includes low gradients below 45° to horizontal lines.